

**[ DENR ADMINISTRATIVE ORDER NO. 2010-17,  
June 18, 2010 ]**

**IMPLEMENTING RULES AND REGULATIONS (IRR) ON THE  
CONDUCT OF INSPECTION, VERIFICATION AND APPROVAL OF  
SURVEY (IVAS) IN THE PHILIPPINE REFERENCE SYSTEM OF  
1992 (PRS92)**

Pursuant to Executive Order No. 192, series of 1987, Executive Order No. 45, series of 1993 entitled "Adopting the Philippine Reference System of 1992 as the Standard Reference System for Surveys in the Philippines", as amended by Executive Order Nos. 280 and 321, DENR Administrative Order No. 2005-13, the "Revised Guidelines for the Implementation of the Philippine Reference System of 1992 (PRS92)", and DENR Administrative Order No. 2007-29, the "Revised Regulations on Land Surveys", the following rules and regulations on the conduct of inspection, verification and approval of survey (IVAS) are hereby issued for the guidance and compliance of all concerned.

**Section 1. Basic Policy.** It is the policy of the State to accelerate land surveys in the entire country through effective and efficient adjudication and disposition of alienable and disposable lands of the public domain and other lands reserved or utilized by other government agencies.

**Sec. 2. Objectives.** This Order aims to:

- (a) prescribe rules and regulations that will result in an efficient processing of survey returns with non-compliant data submitted to the DENR for verification and approval;
- (b) provide procedures that will supplement the present IVAS methods in the processing of submitted survey returns; and
- (c) provide procedures to review Global Positioning System (GPS) observations for lot surveys including applicable transformation methods from local or arbitrary datum to the PRS 92 datum.

**Sec. 3. Scope and Coverage.** This Order shall cover all survey returns of all isolated surveys pursuant to DAO No. 2007-29 as follows:

- a. Group Settlement/Townsite Subdivision Surveys
- b. Public Land Surveys
- c. Amendment Surveys
- d. Private Land Surveys
- e. Government Land Surveys
  - (i) Friar Land Estate Surveys
  - (ii) National Government Lands Surveys
  - (iii) Local Government Units (LGU) Lands Surveys

f. Conversion Surveys

g. Other Land Surveys not included in the above list and intended for a specific purpose.

**Sec. 4. Definition of Terms.** The following terms as used in this order are hereby defined as follows:

(a) Amendment Surveys – surveys covering untitled/undecreed properties by changing the number of lots therein without affecting the original technical descriptions of the boundary.

(b) Common Points – points with known positions in terms of both the local survey system and the PRS92 system.

(c) Conversion Surveys – surveys conducted to transform/convert the lots covered by approved graphical cadastral surveys, cadastral mapping (Cadm) and photocadastral mapping (PCadm) into numerical or regular cadastral lots with computation and plotting in the system of the cadastral project.

(d) Friar Land Estate Surveys - surveys of lands purchased by the government from Religious Orders and private corporations from 1904 to 1913 for distribution to actual occupants and bonafide settlers pursuant to Act 1120, "Friar Lands Act".

(e) Geodetic Engineer (GE) - a natural person with professional expertise in the field of surveying and mapping, either in the government service or in the private practice, and who has been issued a Certificate of Registration and Identification Card by the Professional Regulation Commission (PRC) – Board of Geodetic Engineering, pursuant to Republic Act 8560, otherwise known as the Philippine Geodetic Engineering Act, as amended by RA 9200.

(f) Global Positioning System (GPS) – the satellite-based system of determining positions and elevations of points on the Earth's surface with the World Geodetic System of 1984 (WGS84) as datum.

(g) Government Land Surveys – surveys of parcels of lots administered by or belonging to the National Government or any of its branches and instrumentalities, and include friar land estate survey, national government land survey and Local Government Unit (LGU) land survey.

(h) Group Settlement/Townsite Subdivision Surveys – subdivision of A&D lands not exceeding 1,500 hectares into 50 parcels or more.

(i) Integration – the process of transforming and consolidating land survey data sets into PRS92 and includes inventory of survey data, physical recovery of location monuments or lot corners, observations of the positions of recovered monuments or corners, and generation of transformation parameters.

(j) Isolated Surveys – shall refer to all classes of surveys of isolated parcels of land used for agricultural, residential, commercial, resettlement, or other purposes covering areas not exceeding 1,500 hectares.

(k) Local Government Units (LGU) Lands Surveys – surveys of lands acquired by provinces, cities/municipalities, or barangays, pursuant to RA 7160, “Local Government Code of 1991” and other pertinent laws not needed for public purposes.

(l) National Government Lands Surveys – surveys of all patrimonial properties owned by the government not intended for public use

(m) Philippine Reference System of 1992 (PRS92) – the modified Luzon datum used as reference system for all surveys in the Philippines pursuant to Executive Order (EO) No. 45, series of 1993, as amended by EO No. 321, series of 2000, and EO No. 280, series of 2004.

(n) Private Land Surveys – surveys covering lands claimed or owned by an individual, a partnership, a corporation, or other organization, undertaken for purposes of original or subsequent land registration.

(o) Public Land Surveys – all original surveys covering A&D lands not subject to private rights nor devoted to public use pursuant to provisions of public land laws.

(p) Reference Point – a point on the ground with established position (geographic and rectangular grid coordinates) established by traverse, triangulation, trilateration, Global Positioning System (GPS), or any combination thereof, and also known as Control Point, and marked on the ground by a survey monuments commonly known as Location Monument.

(q) Survey Plan – a two-dimensional map which depicts the lengths and directions of lines, polygons and boundaries as well as the relative horizontal positions of any existing structures on a land parcel.

(r) Survey Returns – the collective documents submitted by a Geodetic Engineer (GE) as a result of his/her survey and include primarily computations, reference data, maps, resulting plan and supporting legal documents as necessary.

(s) Transformation – the process of converting survey data from one coordinate system to another or from one datum to another; e.g., converting local coordinate systems of lot surveys into the PRS92 Philippine Plane Coordinate System (PPCS) – Philippine Transverse Mercator (PTM) Projection, on converting from WGS84 to PRS92 datum.

(t) Transformation Parameters – a set of numerical values defining the mathematical relationship between two sets of coordinates or datum.

(u) WGS-PRS92 Transformation Parameters – the parameters needed to transform GPS observations in the World Geodetic System of 1984 (WGS84) datum into the Philippine Reference System of 1992 (PRS92) datum, consisting of three (3) translations or shifts, three (3) rotations and scale, namely:

- Translation, or shift, parameters
  - X = 127.62195 meters
  - Y = 67.24478 meters

- $Z = 47.04305$  meters
- Rotation parameters
  - $R_x = -3.06762''$
  - $R_y = -4.90291''$
  - $R_z = -1.57790''$
- Scale parameter = 1.06002

(Signs are reversed when transforming from PRS92 to WGS84; source: NRMDP Publication)

(v) Verification – the process of checking the completeness of survey data such as field notes or digital data (whichever is applicable) and accuracy of the results with respect to established standards such as errors of closure (linear, azimuth) and relative precision in accordance with the provisions of the Revised Manual for Land Surveys in the Philippines and related Implementing Rules and Regulations.

**Sec. 5. Revised IVAS Work Flow.** The following revised IVAS work flow (attached as Annex A<sup>\*</sup>) shall be followed:

- (a) Submission of survey returns by licensed Geodetic Engineers or other government agencies for verification and approval;
- (b) Preliminary examination of the survey returns to determine completeness and adherence to survey standards;
- (c) Assessment of fees (verification, preparation and other fees), designation of kind of survey, assignment of survey number, and recording and indexing;
- (d) Digital projection of submitted survey returns on the proposed Land Information Map (LIM) by the Projection Unit;
- (e) Verification of computations (boundary, reference, astronomical observations, traverse, recovered corners/common points, lot data, lot corner settings) by the Computation Unit;
- (f) Verification by the Computation Unit of GPS-related observations including supporting documents such as:
  - (i) GPS receiver registration and calibration
  - (ii) GPS data including raw GPS observations in appropriate format, fully accomplished field sheets, descriptions of all PRS92 control stations used, and brand, model and serial number of GPS receivers and antennas.
- (g) Verification of the transformation accuracy including number, distribution and accuracy of recovered "common points" and the transformation technique adopted.
- (h) Verification of prescribed scale, centerline coordinates and plotting, adherence to cartography standards, completeness of features on plan, and completeness of notation and other survey details by the Cartography Unit;